THE ENGINEERS' PLACE IN THE POLITICAL SUN

A consensus of opinion by the College of Engineering faculty at Ohio State University

Compiled by Donald E. Postlewaite

Probably every engineering student at Ohio State University hopes to become an engineer in his own field upon graduation. As an engineer he will be faced with many problems, a good proportion of which will likely be related in some degree, either directly or indirectly, with society and hence with politics. Thus, the question of the "Engineers' Place in the Political Sun" is of prime importance to all students in the engineering college. With this view in mind, the Ohio State Engineer has attempted to gather the opinions of the college of engineering faculty to present to the students in order that they may learn what educators at this university think on the subject. Naturally, with space limitations imposed, these men were unable to present a complete picture of their thoughts; however, in a general manner, the essentials of their opinions are included in their contributions.

One of the most surprising results upon first observation is that they do not recommend that the engineer should "go into politics" in the ususal sense of the word, but rather he should remain an engineer in practice and thought. However, in the many opportunities afforded by the close relation of engineering to politics, he should cast his power in requiring honest and efficient government and politics, to recognize the social significance of his inventions and practices, and to take an active interest in politics as his social standing as a professional man demands.

Since the days of George Washington, an engineer, soldier, and statesman, the engineer has actively functioned in politics; however, much more important influence has been or at least should be felt from the engineer who does not run for office but who exerts his influence in proper government and politics. By his training in sound fundamentals of economy, efficiency, honesty, and facts, the engineer is a worthy possibility in the political sun.

The Ohio State Engineer takes pride in presenting the contributions of the faculty members who by their positions as educators in engineering are afforded a unique position to present a clear and authoritative opinion on this subject.

DEAN C. E. MacQUIGG

College of Engineering

For a long time engineering educators have debated the content of engineering curricula and the subject has been discussed in our own college for thirty years or more. The general public, however, has now entered the discussion with pertinent questions, not directly on the curricula but on the social responsibility of engineers. While many engineers are shining example today of social-mindedness, yet the public feels that as a class he is not meeting his responsibility in that field. One is constantly hearing—"The scientist and the engineer have done so much for us in material ways, why cannot they help us with our social problems?"

We cannot know the answer to this question; the engineers have not been tested in the sense in which the question is asked. It does seem fairly clear, however, that by and large the engineer has not participated in public affairs to the extent in which his friends would like. Far be it from us to assert that the engineer can solve our vexed problems in economics, international relations, or cultural matters. However, we do believe that heretofore the standard curricula of the technical schools have not always contained those subjects which would sharpen the social consciousness of the engineer. We engineers are told that our habits of thought are conservative, orderly and

"safe"; we also believe that we are gifted as a class with as much imagination as the other professions. It therefore seems reasonable to assume that our lack of social consciousness comes from unfamiliarity with the historical and intellectual ramifications of social problems and that we might well broaden our foundations in these respects.

It would be disastrous, however, if the superficial knowledge of social subjects which could be obtained in our college courses would lead us to advance "cure-alls" for human ills; to do this would be to lose any deserved reputation we may enjoy for reliability. A broader knowledge of the social implications of the engineer's work, however, would stimulate him to a greater interest in his responsibilities towards the community. When the social consciousness of the engineer as a class is aroused, we can hope that this participation in public affairs will be helpful.

JUNIOR DEAN W. D. TURNBULL

College of Engineering

I presume the first thing one should do before attempting to express an opinion on the subject assigned by the Ohio State Engineer would be to define what is meant by the expression "Political Sun". According to the dictionary there are two definitions of the word "Politics". The first one states that Politics is the branch of civics that treats of the principles of civil government and the conduct of state affairs; the administration of public affairs in the interest of peace, prosperity and safety of the state; statecraft; political science; in a wide sense embracing the science of government and civil polity. The second definition states, and by the way I take it the Engineer did not include this in its thinking: Political affairs is a party sense; the administration of public affairs or the conduct of political matters so as to carry elections and secure public offices: party intrigues; political wire-pulling; trickery.

It goes without saying that the engineer should concern himself with the activities outlined in definition number one. Too often the engineer is considered by others and, indeed, by himself, as one who applies the principles of mathematics, physics and chemistry to the solution of technical problems without any concern for the sociological, economic and spiritual effects of his engineering achievements.

His education should, therefore, not only fit him to use the materials and forces of nature, but should fit him to take an active part in the affairs of the state because his engineering work has such a profound effect on the modes of living of his fellow man. To meet this non-technical demand on the engineer our engineering curricula should have in them certain liberal electives such as economics, history, political science, sociology, etc. However, it is not enough to take a few such isolated courses in college. The young engineer should get some field experience in social and civic affairs just as he does in his engineering practice. His professional development after graduation should, not only be along technical and scientific lines by engineering practice and reading in the literature of his profession, but also by participation in civic affairs and by extensive reading along non-technical lines. If the engineer, who is by training and nature, a person that has ability to analyze situations and conditions, that has resourcefulness, ingenuity and orderliness, will apply these same fine qualities in the solution of socio-economic problems he will then have a place in the "Political Sun".

DR. JAMES WITHROW

Department of Chemical Engineering

As a citizen the engineer owes a double duty to society and government. As a person he supports it as a leading cooperative agency for the public good—the advancement of personality—and the liberation of those suppressed by the more resource possessed, whether they be ordinary citizens or in position, who handicap others in their own interest. The engineer's double duty comes from his additional training and experience in design and management of projects as well as affairs. Like other citizens he knows his experience is valuable but limited in scope, and therefore knows it does not entitle him to insist on his own way—a rare balance in those who engage in political affairs. This is probably the engineer's greatest potential contribution.

The Engineer knows he is not as close to political affairs as some other professional men. However, of all such men he probably becomes most absorbed in his own problem of the moment and is too busy to mind his neighbor's business. From his code of ethics, when he is in charge he makes sure not to be used by those who would relatively advance themselves by cir-

culating their neighbors ill repute or blocking their ideas. He wants only men about him who are interested in making every man's job a success. The politician rejoices too often in the downfall of those who shine too brightly to suit his "place in the sun". The engineer abominates such character in his subordinates and associates. He seldom spends time "making a job for himself". He wants to go to the next problem and do things in his own work and expects his neighbor to do the same.

Chemical Engineers can do much for society in their regular occupations in reducing atmospheric and stream pollution, and many similar matters of public concern. We are proud of alumni who to their personal loss reject or oppose use of chemicals as substitutes for natural products in the flavoring and other treatment of food products or the manufacture of any material deleterious to the public health or welfare. The Chemical Engineer is frequently in the position where he must decide how far he can go in certain directions without feeling he is prostituting the public interest for gain.

As long as international questions are being determined by might instead of right, the politician who deals with international matters must be well informed concerning ability of his country to back up its demands. This is frequently an engineering matter. Lack of chemical engineering intelligence or of consulting of chemical engineering sources when the allies evacuated Antwerp made a present to the German government an unexpected gift of vital chemical stores which kept them adequately in the field for a year until their own plants could be built. These stores could have been destroyed in three hours, and the German armies would have been out of business by the end of 1914.

Every citizen is and must in a democracy be intensely interested in political detail, seeking nothing for himself, though he sometimes must function in government. The engineer knows that to make the project a continuing success, it must have continuing attention. He must actively participate when permitted by rights and privileges assigned to all in turn, and when not prevented by change in administration, or at rare intervals by a moral obstacle through disagreement or dissent from current public opinion.

In fact the engineer has a peculiar duty to stand out against current public opinion, real or propagandized, when resistance is in the public interest, and not merely for personal gain. He will often know that a line of governmental procedure will be unsound in the long run, technically, financially, or socially.

His personal loss is often real when he does this, but he is often happiest when his neighbors universally agree he can't be right. He knows the value of time in history even in local government affairs.

—James R. Withrow.

CHARLES ST. JOHN CHUBB

Chairman, Department of Architecture and Landscape Architecture

Buildings have significance of three kinds: economic, social, and political. The measure of such significance is found in the answer to the questions: How much money will the building make? How much human happiness will it make? How many votes will it produce at the next election?

Every building should have some social objective. Too often the objective is mere money making and, in these days, vote getting. The architect of commercial and industrial buildings should never let the owner forget that human beings must work therein, and that such buildings may have very great social significance in terms of working conditions and employment. Investment buildings for rental purposes too often have a most detrimental effect on the proper solution of the problems involved in city planning. Public buildings, paid for by taxpayers, are too frequently involved in politics, particularly as regards their location and cost.

It is, perhaps, asking too much of human nature to demand that an architect refuse the professional commission to execute any of the above buildings, because in his inner self he knows that it is not in the public interest. He should, however, make it his professional duty to advise his client, public or private, concerning the social implications of what he is about to build.

The first duty of every professional man is to identify himself with his national and local professional organizations. Collectively, his voice of protest and of progress will be heard. Individually, he is but a prophet crying in the wilderness. Architects may be of very great service to society as members of city councils, city planning commissions, zoning boards, school boards, and state legislatures. Our outmoded city plans are the result of planning by speculative real estate operators with suburban lots to sell. Our building laws are written under the pressure of material manufacturers with goods to sell, and by organized labor with excessive hours of labor to be legislated into building. Building costs are too high, and it is time for the architect to be heard, and this may be accomplished by greater political activity in the interest of the public welfare.

PROF. DON JOHNSTONE

Department of Civil Engineering

Analysis of the economic background of his projects has long been an accepted function of the civil engineer. Though the final decision on where to build, and how, rightly rests with those supplying the capital, it is the engineer whose recommendations are first looked to on the feasibility of any proposed undertaking.

In the case of privately financed projects he has done pretty well. The financiers have been content to ask "Is this economically the best way to do the job?"—and he has answered. In the case of public works, however, his record is not so thoroughly to his credit. He has not had financiers to deal with there, but councilmen and legislators—and their demands have been a little complex. "Is this," they choose to ask, "the best way economically **and politically** to do the job?"

The cold, precise reasoning to which he is accustomed suffices for the first question; it fails with the second. And too often, because he can not evaluate the political factors precisely and by formula, he has been prone to discount them as of no importance—or worse, to blindly attack them as standing in the way of "progress." He has been slow to recognize that this is, after all, a world of human beings whose manners and desires and fears are not to be ignored; and slow also to recognize that "politics" is simply the art of composing the differences in those manners, adjusting the conflicts of those desires, and allaying those fears. Slow, yes, but he is learning, and he must continue to learn if he is to have "a place in the political sun." He will play the game according to the rules, or sit on the bench.

But why should he not take the easy way out, one may ask, and stick to his technical last? The answer is simple and clear: Because by so doing he would partially fail in his duty of shaping the forces of nature to the use and convenience of man.

With the rapid expansion of regional planning, controlled development of natural resources, regulation of power and transportation facilities, and the like, there is more urgent need today for rational, disinterested political thinking than at any time in the past. For "planning" and "regulation" can bring new freedom and new opportunity, or tyranny and stagnation, as their guiding force is socially intelligent or self-seeking. It is the engineer who shapes those plans and regulations in their early stages; and it is he who can best approach that task with an eye single to the welfare of society. But then, perforce, he turns them over to the "representatives of the people" for adoption. Is he to stop there? If so, he has not fulfilled his duty. It is there that his real opportunity begins.

To meet the politician on his own ground; to anticipate his criticism, yield where yielding is proper, stick to his guns where sticking is required; to be politically astute enough to sell him an undamaged bill of goods—that is his task. If he can do that, if he can make "politically best" synonymous with "socially best," he has made his own place—and a worthy one—in the political sun.

BY H. W. BIBBER

Department of Electrical Engineering

The engineer has a duty as a good citizen, just as does any other professional man, to take an interest in politics in order that our representative government may function effectively. In view of the increasing participation of government agencies in engineering undertakings of one sort or another, it would certainly appear logical that the engineer should take the same sort of special interest in the engineering undertakings of government agencies that the lawyers take in legislative activities, and the doctors in the medical and public health activities of the government.

Just as the medical profession, represented by the national or local associations of doctors, undertakes to provide a leadership for public opinion in matters relating to public health and medical legislation, so should the engineers, through appropriate national and local organiations exert their influence in the engineering and construction undertakings into which so much government money is going these days. The engineer's special interest is in the way in which the money appropriated for a project is spent and how the project is carried out. It is not contended that the engineer has any special ability beyond that of any other citizen to determine whether expenditures for

public works are justified socially or not. The engineer does have, of course, a training beyond that of other professions in determining the economic value of public service enterprises for light and power, heating, transportation, communication, and the like.

In the manufacture of electrical equipment today, and its use in either the power or communication field, agencies of the federal, state, or local government are on every hand endowed with considerable regulatory powers. Inasmuch as electrical engineers must work under the regulation of several commissions, they are in a position of responsibility with respect to the rest of the citizens of our democracy to inform them, in as non-technical language as it is possible for them to muster, what the results of these regulatory activities are as they view them with an expert eye.

Engineers are, of course, human and subject to bias and prejudice as much as doctors or lawyers. Because of the fact that engineers who recognize the possibility of this bias may resent the presentation of biased interpretations by other professional groups on matters on which they may be considered experts, this should not prevent the engineering group from giving its opinion. We shall be in the only safe position for the continuation of our present form of government if we allow, and indeed, encourage and require equality of propaganda for the different views which may be held.

The engineers as a group have been educated in the basic physical sciences, and in such subjects as mechanics where an accuracy of four or five decimal places is possible. Consequently up to now they have appeared to dislike and keep away from any fields in which little more than opinion could be given, no experiments could be undertaken to check hypotheses, and in which appeals to emotion have been far commoner than any appeals to reason. It is on this latter point that the engineering student does well to redirect his thoughts and attitudes if he has already acquired a prejudice against the study of—and participation in—social and political affairs when he graduates from the University.

In summary then, an engineer has all the normal citizenship obligations of a non-professional person, he has a special duty to provide information for the public and leadership of public opinion in the technical and engineering aspects of governmental activity, and finally, because of his particular training and habits of thought and action in his profession, he must make a special effort to interest himself in politics so as to adequately carry out his duties as an ordinary citizen and his particular political responsibilities as an engineer.

PROF. JOHN YOUNGER

Department of Industrial Engineering

Sometimes it seems a far cry from our engineers who work with material things in plants and shops to the politician who works on our emotions and yet occasionally the two do get together.

Such an example is afforded now by the fact that two senators, Senator Faddis and Senator O'Mahoney, are seeking to put through bills which would tax machine tools. It behooves all of us who believe in machinery and its benefits to rally against these bills. I have not seen Senator O'Mahoney's Bill but I gather it is similar to that of Senator Faddis in that it proposes to put a heavy tax on machine tools which seemingly and temporarily displace labor. The proceeds of this tax are supposed to support those so made idle.

This Bill does not want to tax the machine, the automobile, the iceless refrigerator, the washing machine, the radio, etc. It is recognized that these machines are blessings. But the bill does not realize the fact that without the machine tools the machine would not be possible.

There was an article in the Sunday New York Times of April 7th to the effect that elaborate committees are being got up to judge whether or not the machine tool is or is not a displacer of labor, so there are chances the whole matter may be aired before the Senate.

Labor problems—the work of the N. L. R. B.—the possibility of changing the Wagner Act are all matters before our legislators just now so the Industrial Engineer is very much in Politics. So much so that we as a Faculty have added to our curriculum next year a course in 'Labor Problems Legislation'. It will pay not only the industrial engineer who is concerned with the use of the machine tool but also the mechanical engineer who designs the tool and the machine to study well the effect of their laws and changes as they will have a definite meaning in his work.

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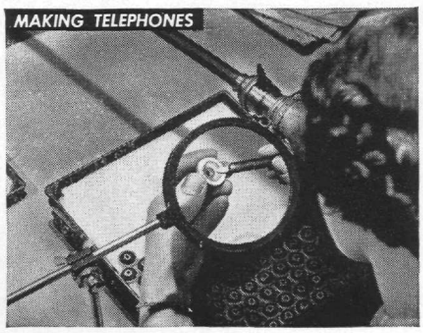

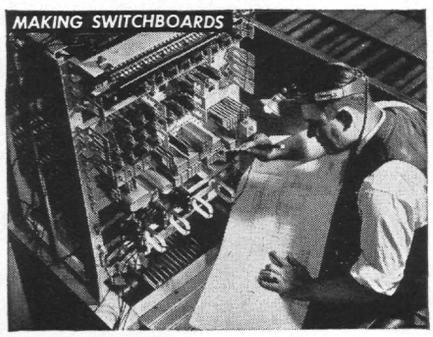

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C. A. NORMAN

Mechanical Engineering Department

An engineer's attitude must be based on facts.

We have then to begin with to face the fact that young men as a rule go into engineering because they are more interested in technical things than in history, political science, sociology, economics, or anything else having to do with human relations. One might therefore have to conclude that by natural endowment the engineer belongs in the shop among his technical devices, rather than in the front office or in public life where important human affairs are discussed.

A modification comes in, however, through the circumstance that modern society is so shot through with technology and industrial relations as to constitute in fact one tremendous industrial unit. It has been said by an economist, Thorstein Veblen, that only engineers possess the technical competence necessary to run such a unit successfully. As a matter of fact, one investigation shows that a majority of leading American industries are already headed by engineers.

Of course, when the sun is shining and life seems nice and easy, the feeling is still pretty strong that society should be run as some sort of a game in which men contend for big prizes, the winners taking all they have managed to lay their hands on. This sort of attitude has, however, now so manifestly resulted in breakdowns, depressions, wars, and revolutions, that before long, no doubt it will have to be abandoned even by those who might wish to cling to it. Then the engineers, if they are ready, may have a chance to show what they can do.

The first world war brought at least one engineer to the front—Herbert Hoover. It was he, more than any other single individual, who taught us that unemployment is a waste, and that our ideal must be to put everybody to work, with the best of tools, in a job for which he is suited, so that he can produce the greatest contribution of which he is capable to the general welfare, which includes his own.

Mr. Hoover, of course, had led an adventurous life, and had prospered so greatly under the old contest idea of society, that he could not easily accommodate himself to the idea of an engineering organization for the social whole. He thought such an organization could be achieved simply by some sort of free, mutual consent. Events have proved that he was wrong. Yet, other engineers have taken up where he left off. A multitude of plans for social coordination have already been suggested. It is up to all engineers who wish to make themselves felt in the field of social reconstruction to familiarize themselves with such plans; to acquire the historical, biological, and economical background necessary to understand social phenomena; and make sure that when they do their work, civilization will thereby really be moved forward, and human life be made richer and fuller.

D. J. DEMOREST

Department of Metallurgy

Any discussion of this subject will have to start out with certain premises which, I believe, will be about as follows:

a. Politics, being of such tremendous national importance, ought to attract the best manhood of the nation.

b. Political affairs are grossly mismanaged and misused because the best manhood of the country has not gone into politics.

c. A prime requisite for a high class political life in any country is intellectual honesty.

d. The emotional appeals made by the typical politician, using the methods of a demagogue, are notorious for their lack of intellectual integrity.

e. The important affairs of the state and nation more and more involve matters which can only be understood by the engineer-scientist-economist.

f. The training of the engineer is one that magnifies fact rather than fancy and, by its very nature, inculcates habits of honest thinking.

These premises quite obviously would indicate that the nation needs more and more of the engineer type in the law-making bodies and administrative divisions. However, the engineer has not the faintest chance of becoming politically potent merely because he is an engineer. Political potency involves vote getting and vote getting demands a much more careful study of human reactions than any curriculum

in engineering offers; and, furthermore, mere contact with the political field seems, to a very considerable extent, to put to sleep the active instinct for intellectual integrity which a man may have, and the mere fact that a young man chooses to enter an engineering career does not prove that he has the moral stamina to maintain, in the field of politics, the level of intellectual integrity which an engineering training tends to give him. The double problem which an engineer will face, if he becomes imbued with the ideal of serving his generation in the political field, is a difficult one, for he will have to learn the techniques of politics and, at the same time, maintain his intellectual honesty if he is to succeed in making effective his accurate engineering information and type of thinking and, at the same time, be successful in politics, which is to say, vote getting.

H. E. NOLD

Chairman, Department of Mine Engineering

As has been said so often before, one of the major elements differentiating our times from all previous times is the increased use of mineral raw materials. Without the enormous annual production of iron, copper, lead, zinc, coal, limestone, petroleum, natural gas, and others, our present type of civilization would be impossible. The work of the mining engineer has to do with the production and preliminary processing of the mineral raw materials. These raw materials are widely but erratically distributed. Most of the production comes from a few major areas. No country has within its borders sufficient of all the essential mineral raw materials.

The United States is the richest in mineral resources, as well as the greatest producer and greatest consumer of mineral products. The combined British Commonwealth of Nations has within its borders mineral raw materials comparable to those within the United States and its territories. Combined Continental Europe would form a third unit of similar importance.

The industrial development of nations demands the free and untrammeled passage of mineral raw materials across international borders. About 75 percent of the world's minerals are controlled, politically or financially, by the English-speaking peoples of the world.

Major international troubles are closely associated with the need of mineral raw materials. Japan, Germany and Italy are the outstanding aggressive nations which are poor in mineral resources.

It is thus easy to see that the work of mining and petroleum engineers has a more direct impact on present-day political and social disturbances than the work of any other engineers. There can be no lasting peace in this world until the problem of equitable distribution of mineral raw materials is solved. Politicians and statesmen have made little progress toward the solution of this international problem. Mining and petroleum engineers have not lived up to their responsibilities and opportunities in a political and social sense. It is doubtful if many of those now holding prominent responsible positions as mining and petroleum engineers have either the vision or the desire to function as they should. This problem must be solved by the young men of today. You who are now students in engineering and particularly mining and petroleum engineering must develop from among yourselves the leaders who will solve these problems.